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AMERICAN NATIONAL STANDARD **ANSI/ASTM A 529 - 75**

Standard Specification for
STRUCTURAL STEEL WITH 42 000 psi (290 MPa) MINIMUM YIELD POINT (½ in. (12.7 mm) MAXIMUM THICKNESS)[1]

This Standard is issued under the fixed designation A 529; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval.

1. Scope

1.1 This specification covers carbon steel plates and bars ½ in. (12.7 mm) and under in thickness or diameter and Group 1 shapes shown in Table A of ASTM Specification A 6, General Requirements for Rolled Steel Plates, Shapes, Sheet Piling, and Bars for Structural Use,[2] of structural quality for use in buildings and similar riveted, bolted, or welded construction. When used in welded construction, welding procedures shall be suitable for the steel and the intended service.

NOTE—The values stated in inch-pound units are to be regarded as the standard.

2. General Requirements for Delivery

2.1 Material furnished to this specification shall conform to the applicable requirements of the current edition of Specification A 6.

3. Process

3.1 The steel shall be made by any of the following processes: open-hearth, basic-oxygen, or electric-furnace.

4. Chemical Requirements

4.1 *Heat Analysis:*

4.1.1 The heat analysis shall conform to the requirements prescribed in Table 1.

4.1.2 When tension tests are not required in accordance with 5.1.2, chemistry consistent with requirements in Table 1 and with the mechanical properties desired shall be applied.

4.2 *Product Analysis:*

4.2.1 The steel shall conform on product analysis to the requirements prescribed in Table 1, subject to the product analysis tolerances in Specification A 6, except as specified in 4.2.2.

4.2.2 Product analysis is not required for bar-size shapes or flat bars ½ in. (12.7 mm) and under in thickness.

5. Mechanical Requirements

5.1 *Tensile Properties:*

5.1.1 The material as represented by the test specimen, except as specified in 5.1.2, shall conform to the requirements as to the tensile properties prescribed in Table 2.

5.1.2 Shapes less than 1 in.^{2} (6.45 cm^2) in cross section and bars other than flats, less than ½ in. (12.7 mm) in thickness or diameter need not be subjected to tension tests.

5.1.3 For material under 5/16 in. (7.94 mm) in thickness or diameter, a deduction of 1.25 percent from the percentage of elongation in 8 in. or 200 mm as specified in Table 2, shall be made for each decrease of 1/32 in. (0.79 mm) of the specified thickness or diameter below 5/16 in. (7.94 mm).

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[1] This specification is under the jurisdiction of ASTM Committee A-1 on Steel, Stainless Steel and Related Alloys, and is the direct responsibility of Subcommittee A01.02 on Structural Steel for Bridges, Buildings, Rolling Stock, and Ships.

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[2] *Annual Book of ASTM Standards*, Part 4.

SUPPLEMENTARY REQUIREMENTS

Standardized supplementary requirements for use at the option of the purchaser are listed in Specification A 6. Those which are considered suitable for use with this specification are listed below by title.

S14. Bend Test.

TABLE 1 Chemical Requirements (Heat Analysis)

Element	Composition, percent
Carbon, max	0.27
Manganese, max	1.20
Phosphorus, max	0.04
Sulfur, max	0.05
Copper, min, when copper is specified	0.20

TABLE 2 Tensile Requirements[a]

	psi	MPa
Tensile strength	60 000 to 85 000	414 to 586
Yield point, min	42 000	290
Elongation in 8 in. or 200 mm, min, percent	19[b,c]	

[a] For plates wider than 24 in. (610 mm), the test specimen is taken in the transverse direction. See 11.2 of Specification A 6.

[b] See 5.1.3.

[c] For plates wider than 24 in. (610 mm), the elongation requirement is reduced two percentage points.

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